

DuPage County Environmental, Safety, Health & Property Loss Control Program

Public Works Laboratory Chemical Hygiene Plan

Purpose: This Chemical Hygiene Plan (CHP) will provide information for laboratory and non-laboratory personnel protection from the Health and Safety hazards associated with hazardous chemicals.

Policy: This CHP must be readily available to all affected employees and their representatives. This plan requires that fume hoods and emergency equipment such as Emergency Showers and Eye Wash Stations, are functioning properly. It also establishes the Personnel Protective Equipment (PPE) required of staff and visitors to the Lab. "Horse play and practical jokes" in the lab are not permitted and can be grounds for disciplinary action including termination per Human Resource policy.

Implementation:

- A. The Director of DuPage County Public Works is responsible for the implementation of the Chemical Hygiene Plan (CHP) in compliance with IDOL/OSHA 29 CFR 1910.1450.
- B. The Chief Chemist is the Chemical Hygiene Officer. This person is responsible for annually reviewing the CHP and communicating changes to the Director of Public Works and the Risk Management Coordinator; implementing and enforcing the CHP with the support of the Director and the Woodridge Chief Operator.
 - 1. All laboratory personnel shall be responsible for following the mandate of the CHP and making sure that the CHP is followed by all other personnel when appropriate.

Training:

- A. **Responsibilities and Frequency of Training**
 - 1. The Chemical Hygiene Officer (or someone with appropriate training who is approved by the Chemical Hygiene Officer) is responsible for Chemical Hygiene Plan Training.
 - 2. Any new addition to the laboratory staff will undergo training prior to start of any laboratory work and sign training acknowledgement to be filed in the individual's Human Resources Record.
 - 3. Training should be a regular and continuing activity-not just an annual Refresher training with signed acknowledgement for the staff's Human Resource record.
 - 4. All laboratory personnel will have available a copy of the CHP, the Laboratory Procedures Manual, MSDS's and the Safety Eye Wear Policy. Also will be shown how to access the County's Environmental, Safety, Health and Property Protection Program on the County's Intranet Site.
 - 5. The Chief Operator or designee will make periodic (at least semiannual) inspections with written record maintained in the lab, of the laboratory facilities and procedures to check for compliance with the CHP.

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B. Elements of the Chemical Hygiene Plan Training:

1. Components of the CHP and appendices in 29 CFR 1910.1450.
2. Location of the CHP
3. Material Safety Data Sheet training, this will cover:
 - a) Methods and observations used to detect the presence or release of hazardous chemicals,
 - b) Physical and health hazards of chemicals,
 - c) The measures and procedures laboratory personnel must take to protect themselves from the hazardous chemicals, including emergency procedures and personal protective equipment to be used,
 - d) Permissible exposure limits for OSHA regulated substances or recommended limits where no OSHA standard has been set, and the
 - e) Location and availability of known reference materials on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory.

C. Basic Rules, Procedures, and Principles to Follow While Working in the Laboratory:

1. **SAFETY HAZARDS:** Many hazardous, toxic, and / or corrosive chemicals are used in the Public Works Laboratories. The identity of these chemicals is generally known through experience and Material Safety Data Sheets. However, there are many gray areas and unknowns when it comes to chemical hazards. In addition, reaction, sensitivity, and tolerance to chemicals vary from person to person. Safety hazards associated with a mixture of chemicals can be different from the hazards associated with the individual chemicals that make up the mixture.
2. **EXERCISING DUE CARE:** Because of the wide variety of hazardous chemicals in use in the laboratory, it is prudent on the part of all laboratory personnel to take whatever steps are necessary to minimize or eliminate their exposure to any chemical used in the laboratory.
3. **EYE PROTECTION:** Eye protection must be worn according to the **Laboratory Eye Protection Policy and the Laboratory Procedures Manual.**
4. **SAFETY OBSERVER:** If hazardous work is being performed as indicated in the Procedures Manual, there should always be more than one person in the laboratory.
5. **PRIOR APPROVAL:** No person shall do any work for which prior approval has not been received from either the Chief chemist or a Designee who has been approved to do training by the Chief chemist.
6. **FOOD AND DRINK:** Neither eating nor drinking are permitted in any area of the laboratory.

7. **THE NOSE AND THE LABORATORY:**
- a) Be very cautious about smelling any chemicals in the laboratory, which are unfamiliar. Many chemicals have a very powerful, pungent, stinging odor. The chemical may also be toxic.
 - b) If you must use your sense of smell to help identify a substance, the proper procedure is to hold the container opening away from your nose and to gently waft air across the container opening toward your nose with your hand. This procedure should be carried out in the front of a properly operating fume hood
 - c) Other personnel in the laboratory should first be queried for their input as to the identity of an unknown material before doing this.
8. **FUMES:** The following operations must be done inside a properly operating fume hood (or have a venting hood above the operation that removes the fumes):
- a) Metal digestions except for mercury (which is done inside an autoclave)
 - b) Kjeldahl Nitrogen Digestions
 - c) Volatile matter determinations
 - d) Opening of and dispensing from volatile acid and volatile base containers (i.e. hydrochloric, nitric, and hydrofluoric acids, ammonium hydroxide, the volatile organic acids and their isomers, such as formic, acetic, butyric, propionic, etc.)
 - e) Acid washing of lab ware
 - f) Atomic absorption analysis of any type;
 - g) Use of Hazardous / Flammable Organic Solvents such as acetone, chloroform, and methylene chloride;
 - h) Work with toxic priority pollutant organics;
 - i) Any other operation emitting strong or hazardous fumes or dusts and powders, including sludge grinding.
9. **SULFURIC ACID:** When making solutions of sulfuric acid from concentrated acid, pour acid into water and never the other way around. The reaction of water with sulfuric acid is very exothermic (extreme release of heat). If water is added to concentrated acid, the water can be converted to steam from the heat generated, giving rise to splattering of acid. Never use a container that has a crack, as it may rupture.
10. **EQUIPMENT AND GLASSWARE:** Handle and store laboratory glassware with care to avoid damage; do not use damaged glassware, as it could break at any time. Discard the damaged piece of glassware in a box marked for broken glass or set it aside for repair. Any piece of glassware, which shall be or is evacuated (such as a Dewar flask or a vacuum desiccator), must be taped up and / or shielded so as to minimize a hazard from flying glass fragments and chemicals should an implosion occur. **Use equipment only for its designed purpose.**

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11. **LABORATORY CONDUCT:** Practical jokes or other behavior, which might confuse, startle, or distract another person is strictly forbidden.
12. **PERSONAL APPAREL:** Confine long hair and loose clothing around open flames. Avoid long bulky sleeves, which can catch on and knock over containers. Closed toe shoes must be worn in the laboratory at all times. Sandals and perforated shoes are not permitted, nor any other open type of shoe.
13. **PERSONAL HOUSEKEEPING:** Keep your work areas clean and uncluttered, with chemicals and equipment being properly labeled and stored. Clean up the work area upon completion of an operation or at the end of the workday.
14. **ACID CARBOYS:** When pouring acid from large 5 or 6 gallon carboys, rubber gloves, plastic aprons, full face protection, and steel toed shoes are required. The operation will also be carried out in or in front of a properly operating fume hood with no makeup air supply in operation at the time. An adequate supply of sodium carbonate must be close by for immediate neutralization of any acid spills.
15. **TRIPPING HAZARDS:** Passageways within the laboratory must not be blocked nor littered. This can cause trips and falls in addition to spillage of hazardous chemicals.
16. **MUFFLE FURNACES:** Crucibles, beakers, and other glassware are to be placed into or taken out of hot drying ovens and muffle furnaces using the correct size and type of forceps. Heat resistant gloves are also recommended for hand protection.
17. **CROSS CONNECTIONS:** Rubber hoses and other tubing should not be connected to any potable water supplies in such a manner as to lead to back siphoning, should the water pressure drop and a vacuum be created in the water line. This constitutes a cross connection and is illegal and unsafe.
18. **CONDENSERS:** All water lines under pressure (i.e.: rubber, tygon, or silicone tubing) which are attached to condensers will be clamped.
19. **SMOKING:** The entire laboratory area is a NO SMOKING AREA.
20. **VACUUM SYSTEM AND ORGANIC SOLVENTS:** The vacuum system shall not be used for the evaporation of flammable or nonflammable organic solvents. The vacuum system does not vent to the outside. Therefore, the fumes from the solvent will fill up the vacuum tank on the pump and then vent into the air in the mechanical equipment room. Needless to say, this will produce a hazardous situation and possibly an explosive situation as well.

B. Hazardous Chemical Identification in the Laboratory:

1. All chemicals received in the laboratory will be dated upon receipt by the Chief Chemist or designee.
2. The labels of all new chemicals received in the laboratory will be inspected by the Chief Chemist for adequacy of safety information and hazard warnings and amended as necessary.
3. Any unlabeled container, into which a chemical has been transferred and which does not already contain the appropriate safety information, and in which the chemical is meant for permanent storage as opposed to strictly temporary containment (meaning same day containment), must be properly labeled with all pertinent information regarding **PROPER IDENTIFICATION, SAFETY HAZARDS, and HANDLING PROCEDURES** by the person who did the transfer.

C. Procedure for Protection from Exposure to Chemicals Which are Highly Toxic, Have High Chronic Toxicity and / or are Carcinogens – Known or Suspected:

1. Compounds, which fall into this category, will be identified through container labeling. These compounds include:
 - a) Heavy metal compounds, such as potassium dichromate, and arsenic compounds;
 - b) Potassium cyanide or other free cyanide containing chemicals
 - c) Any other of a number of chemicals used in the laboratory.
2. Skin absorption must be prevented using appropriate gloves.
3. Long sleeve protection may be necessary to prevent skin exposure above the glove line.
4. Any toxic chemical in this category, which is volatile, must be handled in a fume hood. The chemical should never be used outside of the laboratory without adequate ventilation.
5. Minimize or avoid shaking up a bottle of solid material. Vapors and / or dust will more easily become airborne for inhalation. Such bottles should be opened and / or worked with in a fume hood if dusts can be given off.
6. Specific procedures are elaborated on in the Procedures Manual. Consult it for more information.

7. Cleanup of Accidental Spills:

- a) If the spilled material is a solid, do not dry sweep the material. Use a wet mop, wet rag, etc. to avoid making the material airborne for inhalation. Wear a dust mask and rubber gloves during the cleanup as needed, depending upon the quantity of the spill. If the solid material releases harmful vapors, a breathing mask or self-contained breathing apparatus must be used
 - b) If the spilled material is a liquid that is soluble in water, again wipe up with wet mop, wet sponge, etc. If harmful vapors are or may be present in the air, a breathing mask or self-contained breathing apparatus must be used. However, no-one shall use the self-contained breathing apparatus, unless they have received the proper training for using it and medical clearance and records have been kept which indicate the training is current. Appropriate protective gloves are required, as is eye or face protection.
 - c) If the material is a liquid that is not water soluble, it must be cleaned up with an absorbent, and the absorbent material properly disposed of, following instructions of the Chief chemist and / or the Material Safety Data Sheet. Eye or face protection is required as are protective gloves.
 - d) Mercury spills - *mercury vapor is toxic*. All spills should be cleaned up as soon as possible. Wear protective gloves to prevent skin absorption.
 - (1) For easily accessible droplets of significant quantity, use a sponge type pickup kit to absorb, trap, and pickup as many of the droplets as possible, or use a pipette. The droplets are then transferred to the holding container for eventual reclamation. Use the Mercury Absorb cleanup kit to finish the cleanup as necessary. Follow instructions supplied with the kit.
 - (2) For mercury spills that are not accessible for easy pickup, the Mercury Absorb cleanup kit must be used. One of these kits is available at each laboratory. Follow the instructions with the kit to neutralize and absorb the mercury.
 - (3) Keep mercury detector cards posted in the laboratory for detection of mercury vapors.
 - (4) For other spills that do not fit into any of these categories, consult with the Chief chemist and / or the Material Safety Data Sheet for instructions on cleanup and disposal.
 - (5) Wash hands and arms immediately after working with hazardous materials as indicated in the Laboratory Procedures Manual.
8. Records will be maintained on the dates and uses of hazardous chemicals by all lab personnel.

D. Disposal of Waste Chemicals in the Laboratory:

1. Any container that contains an unknown chemical or chemical mixture, which cannot be identified, will be disposed of immediately. The method of disposal will be determined by the Chief Chemist. If there is any reason to suspect that the unknown chemical may be a hazardous substance that is incompatible with the treatment plant in the quantity that must be discarded. All laboratory personnel should be queried for information leading to possible identification.
2. No waste chemical containing an organic solvent that is insoluble in water will ever be dumped down the sink drain. The waste will either be set aside in a clearly marked container in a proper storage area for proper disposal, or reclaimed following suitable procedures outlined by the Facilities Manager.
3. Excessive wastes containing strong acids should be neutralized with base, such as sodium carbonate or sodium hydroxide, before being dumped down the drain.
4. Disposal by recycling, reclamation, and decontamination is to be used where at all possible.

E. Chemical Storage:

1. All chemicals will be dated upon receipt, and dated again when opened. Expiration dates will be indicated on the container when applicable.
2. All concentrated acids and bases will be stored at low levels, and preferably under the fume hoods. Nitric acid shall be stored separated from sulfuric acid as much as possible.
3. Bases will be segregated from acids in different cabinets under the fume hoods.
4. No large glass containers are to be stored up high in such a manner that they could easily be knocked off and broken.
5. Liquid organic chemicals are to be stored in a closed flammable liquid storage cabinet if at all possible or in metal cans if they don't fit into the cabinet.
6. **Gas Cylinder Storage and Usage**
 - a) All cylinders are to be transported in a wheeled cart to which the cylinder is secured
 - b) Individuals should seek help when moving cylinders, especially the large cylinders that are used for helium, nitrogen and nitrous oxide. Back injuries and other injuries that could result from attempting to handle heavy cylinders can be more easily avoided
 - c) Alternatively, the cylinders can be transported in the back of a truck if they are firmly secured in an upright position.
 - (1) The cylinder must have the protective cap firmly secured.
 - d) All gas cylinders are to be strapped off to the bench top or other stationary support system so as to prevent accidental falling of the cylinder. Such an incident could result in the cylinder head breaking off.
 - (1) This could result in the cylinder launching off like a torpedo.
 - (2) The contents of the cylinder will be emptied into the air, exposing personnel to possible hazardous and / or flammable chemical.
 - e) When not in use, all cylinders are to be turned off at the cylinder head. The fine adjustment on the gage is also to be turned off so as to avoid permanent flexing of the membrane inside the gage.

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- f) Empty cylinders must be tagged as "EMPTY" after they are returned to the cylinder storage area.
 - g) After changing cylinders, the regulator connection (and other connections which have been disturbed) shall be leak tested immediately after the gas is turned on.
 - h) All lines from each cylinder shall be labeled with the identity of the appropriate gas.
 - i) Each cylinder shall only be used with the appropriate regulator for that gas. No adapters are allowed.
 - j) No regulator should be lubricated or otherwise come in contact with grease or oil.
7. Storage of all other chemicals not specified above must be in the Chemical Storage Room at the Woodridge Plant or other suitable locations as determined or approved by the Chief chemist.

F. Protective Equipment and Personal Protection:

1. Equipment and apparatus that is available for protection of laboratory employees:
 - a) **SAFETY GLASSES:** Safety glasses having chemical and/or impact resistance are provided by the County. See the Laboratory Eye Protection Policy.
 - b) **SAFETY GOGGLES:** Certain operations may require greater degrees of protection against splashing than can be provided by ordinary safety glasses. In those instances, such as when handling larger quantities of acids and bases, chemical safety goggles with a full face mask will be used instead of safety glasses, as indicated in the Procedures Manual.
 - c) **FACE MASK:** Certain operations in the laboratory constitute a much greater degree of splash risk, such as Kjeldahl Nitrogen digestions, carrying acids and bases in large carboys, and dispensing of acids and bases from large carboys. In these instances and others, as determined by the Chief Chemist or Risk Management Coordinator, a full face shield is required wearing over chemical safety goggles. This provides protection to the entire face and upper neck area.
 - d) **LAB COATS:** These are provided for splash protection over other clothing.
 - e) **PLASTIC APRONS:** These must be worn when working with or handling acids or bases. These are also required when working on Kjeldahl Nitrogen digestions.
 - f) **RUBBER GLOVES:** Gloves must be worn when working with concentrated or only slightly diluted acids and bases, or hazardous organic solvents such as chloroform, acetone, and cello solves. **There are many types of rubber gloves available, so a glove appropriate for the chemical must be used.**
 - g) **PIPETTE BULBS:** Pipetting chemicals by *mouth control* of pipette is **NEVER PERMITTED** Pipette bulbs must be used.
 - h) **FUME HOODS:** Volatile chemicals and chemicals that can emit airborne dusts and powders shall be used in a fume hood as much as possible.

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- (1) The fume hoods and Flammable Storage Cabinet in the lab shall be checked at least quarterly with the use of a flow meter to insure that proper air movement is maintained.
 - (2) A record of this check will be kept in an appropriate book.
 - (3) Any malfunction or incidence of fumes not evacuating property will be immediately noted and reported to the Chief chemist for proper servicing.
- i) **EYEWASH STATIONS:** These are provided for use in the event that a chemical or chemicals are splashed into the eye.
- (1) The eye must be washed thoroughly with water for 15 minutes; medical attention may have to be obtained, depending upon what was splashed into the eye. Your supervisor must be notified immediately.
 - (2) The eye wash stations will be checked monthly to assure their proper functioning. A couple of gallons of water shall be flushed through the line during each check.
 - (3) A record of each check will be kept in an appropriate book and tag along with the signature or initials of the checker.
 - (4) Any malfunction will be immediately noted and reported to the Chief Chemist for servicing.
 - (5) All checks will be done with the alarm operating (at least initially).
- j) **EMERGENCY SHOWERS:** These are provided in the laboratory for use in the event of a large splashing of chemical that is too small to wash off at the sink and that must be washed off as quickly as possible-
- (1) All chemical splashes should be washed off immediately.
 - (2) These showers shall be checked monthly for proper function.
 - (3) Any malfunction shall be immediately reported to the Chief chemist for proper servicing.
 - (4) All checks will be done with the alarm operating (at least initially). During the check, at least 10 gal of water shall be flushed through the shower for thorough cleaning.
 - (5) A record of each check will be kept in an appropriate book and tag along with the signature or initials of the checker.

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- k) **SAFETY SHOES:** Safety shoes must be worn under the following circumstances:
 - (1) When carrying heavy objects, such as the large drying ovens and ISCO samplers;
 - (2) When moving large gas cylinders around;
 - (3) When going out into the plant area for sampling purposes or other work;
 - (4) When doing field sampling and inspections such as in manholes, streams, quarry sampling, or industrial accounts;
 - (5) Any other circumstance deemed necessary by the Risk Management Coordinator in order to protect the toes and feet.
- 2. Additional control measures which may be required:
 - a) Any time a laboratory employee complains about possible exposure to a hazardous chemical for which no protective equipment is currently available at the laboratory that will provide adequate protection, the Chief Chemist and Risk Management Coordinator will investigate. If equipment is needed that the Chief Chemist is not authorized to automatically purchase, a recommendation will be forwarded with justification to the level of authority needed.
 - b) In the event safety equipment, which in the opinion of the Chief Chemist is necessary to comply with the chemical exposure limitations expressed in 29 CFR 1910, and no other suitable alternatives are forthcoming for complying with the regulations, the Chief Chemist will cease operations which are causing the exposure problems and contact the Director of Public Works and the Risk Management Coordinator regarding the discontinued operations and the reasoning.
 - c) Any protective equipment failure which will make it impossible to protect against a chemical exposure will automatically cause the termination of those laboratory operations requiring that safety equipment until such time as the equipment is repaired, replacement equipment is purchased, or a suitable procedure is worked out which will not expose the worker(s) to a hazardous level of chemical/fumes/vapors..

G. Medical Program:

- 1. The exact details of the requirements of the regulations are given in the 29 CFR 1910.1450.
- 2. When a laboratory employee develops signs or symptoms of overexposure to a hazardous chemical, where exposure monitoring may indicate the presence of exposure levels of a chemical above the action level or above the Permissible Exposure Level (PEL), or whenever an event occurs which increases the likelihood of overexposure to a hazardous chemical (i.e. spill, leak, explosion), the employee will be given the opportunity for a medical consultation or medical treatment by or under direct supervision of a licensed physician.
- 3. The medical consultation or treatment will be at no cost to the employee, without loss of pay, and at a reasonable time and place.

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4. The County shall supply the attending physician with information on the identity of the hazardous chemical(s), a description of the conditions of exposure and quantitative exposure data if available, and a description of the signs and symptoms of exposure the employee is experiencing, if any.
5. The attending physician will submit a written report to the County which shall include the following:
 - a) A recommendation for further medical follow-up
 - b) Results of the medical examination and any associated tests
 - c) Any medical condition uncovered from those tests or examination which could put the employee at increased risk due to exposure to a hazardous chemical found in the laboratory, and
 - d) A statement that the employee has been informed of the findings of the consultation and for examination and of any medical conditions which may require additional examination or treatment.
 - e) No specific findings of diagnoses unrelated to occupational exposures will be included

H. Emergency Procedures

1. **Acid Spills:** (Wear rubber gloves during this procedure!)
 - a) All or any of the following should be performed as necessary for spills of hydrochloric, nitric, sulfuric, or any of the volatile acids:
 - (1) Use the eyewash, water faucet, and / or shower
 - (2) Get help
 - (3) Advise management of the spill and arrange for medical attention if needed or desired. An acid splash in the eye could be very damaging to the eye; medical attention is required after a thorough flushing with water.
 - (4) Fill out or arrange for someone to fill out an injury report as described in the HR Intranet site under Workers Compensation as soon as possible after an injury but no longer than 24 hours after the injury. If the accident is severe and will result in the employee needing medical attention, the Director of the Department must be notified.
 - b) Small Size spill of concentrated acid (less than 10 ml) -- wash up or add some sodium carbonate to neutralize first, wipe up, and wash the area with water.
 - c) Medium Size spill of concentrated acid (greater than 20 ml) -- add some sodium carbonate to neutralize, wipe up, and wash the area with water.
 - d) Large Size acid spill (5 pint bottle or more)
 - (1) **Perform the following as needed and possible:**
 - (a) turn on all exhaust hoods,
 - (b) open window vents,
 - (c) close outer doors to the laboratory,
 - (d) turn off makeup air to the fume hoods.

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- (2) Evacuate the laboratory and if fumes have spread or appear to be spreading throughout the administration building, evacuation of the office areas will also be required and call the Fire Department to report a chemical spill.
 - (3) If the laboratory does not need evacuation, proceed with cleanup while wearing rubber gloves, plastic apron, and full face mask or full goggles. Neutralize spill with sodium carbonate and wash up areas with water. Large spill absorption pillows are available for use on these spills for quick cleanup.
 - (4) Resume normal lab operations only after the laboratory has been cleaned of fumes. Continue extreme ventilation of the laboratory as long as is considered necessary.
2. **Caustic Spills:** (wear rubber gloves, full face protection, and plastic apron during these procedures).
- a) **Ammonium Hydroxide Spill**
 - (1) Follow procedures as described above for acids in H.1.a for accidental contact.
 - (2) Use the red indicating solution that is provided for neutralizing caustic spills. The solution changes from red to yellow when the solution has been neutralized.
 - b) **Sodium Hydroxide or Potassium Hydroxide**
 - (1) Chemical burns from these bases can be very serious. Wear rubber gloves and face protection.
 - (2) Avoid having any exposed skin
 - (3) Use a water wash for spills near a drain and wash the spill in to the drain.
 - (4) For larger spills not near a drain, use an inert absorbent material to soak up the majority of the base. The large spill absorption pillows can also be used for cleanup of these spills.
 - (5) Do follow up with neutralization using the red indicating solution purchased specifically for caustic neutralization.

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3. Fires

- a. Chemical fumes from a laboratory fire are likely to be extremely hazardous. All work practices are to be performed in such a way that the potential for a fire is extremely remote.
- b. Sound the alarm and notify others in the building to evacuate quickly.
- c. Fire extinguishers are provided for quick action in the event of a fire. Keep your back to an exit and aim the extinguisher spray at the base of the flame.
- d. It is better to evacuate the laboratory and not put your own life and health in jeopardy. Let trained fire personnel wearing suitable protective equipment handle the fire if you cannot quickly extinguish the fire.

4. Electrical Safety

1. Any frayed or damaged cords or plugs must be replaced before the instrument or apparatus is used.
2. Control switches and thermostats shall be in good working order, with no sparking.
3. Only power cords having a rating matching or exceeding the electrical requirements of the equipment shall be used.
4. Electrical equipment shall not be serviced or adjusted unless it is unplugged or the power is locked out.
5. If electrical equipment has had a liquid spilled on it, it shall not be operated until it has been verified for dryness.
6. Electrical equipment shall not be operated by anyone with wet hands or who is standing in water.

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J. Injury or Incident Investigation

1. The purpose of any investigation is to determine from the cause of incident what needs to be done to prevent its recurrence. It is not meant to affix blame or for determining if disciplinary action should be taken.
2. Consequently, any injury or incident should be reported as soon as possible to the Chief chemist, or Region 9 West Facilities Manager if the Chief chemist is not available, or directly to the Public Works Director if neither the Chief chemist nor Facilities Manager is available and the Risk Management Coordinator. The Chief chemist or Facilities Manager along with the Risk Management Coordinator will conduct an investigation as soon as possible and report to the Public Works Director.
 - a) The appropriate accident forms should be filled out and submitted to the Chief chemist within 24 hours, but as soon as possible and feasible after an accident requiring medical attention, even if the form has to be filled out by someone else. The Chief chemist will notify the Facilities Manager and Public Works Director immediately for any accident that requires medical attention.
 - b) Failure to fill out the injury forms in a timely fashion could jeopardize any Workman's Compensation claim for medical expense coverage.
3. Near miss incidents should also be reported, especially if immediate corrective action is obvious. This is important for the prevention of future incidents.

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K. Fume Hoods: A rule is to use a hood when working with any volatile substance with a **TLV OF LESS THAN 50 ppm**. Hoods operation and testing is described as:

Ventilation Rates.

Laboratory-type hood face velocities shall be sufficient to maintain an inward flow of air at all openings into the hood under operating conditions. The hood shall provide confinement of the possible hazards and protection of the employees for the work that is performed. The exhaust system shall provide an average face velocity of at least **100 feet per minute with a minimum of 70 fpm at any point, except where more stringent special requirements are prescribed by the Chief Chemist**. The minimum velocity requirement excludes those measurements made within 1 inch of the perimeter of the work opening.

When a laboratory-type hood is in use to contain airborne hazardous substances and no employee is in the immediate area of the hood opening, the ventilation rate may be reduced from the **minimum average face velocity of at least 100 feet per minute to a minimum average face velocity of 60 feet per minute if the following conditions are met:**

- (A) The reduction in face velocity is controlled by an automatic system which does not require manual intervention. The automatic system shall increase the airflow to the flow required by (c)(1) when the hood is accessed.
- (B) The laboratory-type hood has been tested at the reduced flow rate according to the tracer gas method specified in Section 7, Tracer Gas Test Procedure, of ANSI/ASHRAE 110-1995, Method of Testing Performance of Laboratory Fume Hoods, which is hereby incorporated by reference, and has a hood performance rating of 4.0 AU 0.1 or less. The test may be performed with or without the mannequin described in the ANSI/ASHRAE 110-1995 tracer gas method.

The tracer gas test need only be performed once per hood. However, if employers have chosen to perform the tracer gas test on subsequent occasions, it is the most recent record of test results and test configuration that shall be maintained pursuant to subsection (c)(2)(C).

- (C) The record of the most recent tracer gas test results and the "as used" test configuration shall be maintained as long as the automatic system is operable and thereafter for five years.

**EYE PROTECTION PLAN
FOR THE
DUPAGE COUNTY PUBLIC WORKS
WOODRIDGE LABORATORY**

- A. All Personnel (Laboratory, Plant, and Visitors) Shall Wear Eye Protection Under the Conditions Described Below. At a Minimum, Such Protection Shall Consist of Eye Glasses or Equivalent Which Have Side Shields. Avoid use of contact lenses while in the lab. If absolutely necessary to wear contacts then while working in the lab Chemical Safety goggles must be worn.**
1. The Woodridge laboratory is segregated into four separate rooms. Personnel and visitors will be required to wear the approved eye protection if chemicals are being used or handled in the room they are in. Lab personnel will alert visitors when the eye protection is required.
 2. The inner door to the laboratory (from the sample receiving room) will be closed if any chemicals are being used in the first bay area by the north door, which would pose a potential hazard to anyone standing in the sample receiving room **WHO IS NOT WEARING EYE PROTECTION.**
 3. The extent of the eye protection required shall be determined by the nature of the work being performed.
 - a) Laboratory personnel shall wear eye protection as prescribed in the procedures manual for the specific test(s) being performed.
 - b) When especially hazardous testing is being performed in the laboratory as determined by the Chief chemist and set forth in the Laboratory Procedures Manual, anyone who enters the laboratory and is in close proximity to the hazardous laboratory work being conducted, will be required to wear additional protection such as regular chemical safety goggles with or without a full face shield (whichever is required of the laboratory personnel working in that area).
 3. Supervisors of other personnel, who must work in the laboratory doing work (i.e. maintenance or repair) other than with chemicals and when no other work with chemicals is going on in the lab, shall set their own requirements for eye protection according to the work which is being done. At a minimum safety glasses with eye shields are required while in the lab.

**DuPage County Environmental, Safety, Health & Property Loss Control Program
Public Works Laboratory Chemical Hygiene Plan**

4. Because hazardous materials can cause bodily harm in the event of explosions, spills, and splashes, and because we therefore wish to minimize the possibility of such occurrences, the use of the laboratory as a walkway for passing through or as an area for socializing is strongly discouraged. It can distract laboratory personnel from their work, possibly resulting in mistakes and incidents. Cooperation is requested from all division supervisors and personnel to prevent such activity.
5. This policy is for the protection of all individuals who may have occasion to enter the laboratory area. Our purpose is to prevent a serious eye injury from occurring. To that extent, everyone's cooperation and diligence is requested and appreciated.

Safety is part of the job for every employee.

It should also be a responsibility that we all should look out for one another.

We should insist that any observed violation of the safety policies listed in this document be remedied immediately.

Supervisors are not exempt from being told to wear gloves, eye protection, etc.

If we look out for each other, any chance of injuries due to “accidental” occurrences (carelessness or otherwise) should be greatly minimized.